

DOMINICA

ANNUAL REPORT

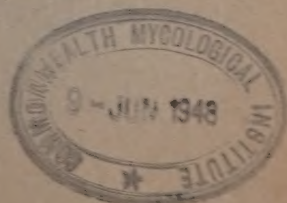
of the

Department of Agriculture

For the Year

1946

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DEPARTMENT OF AGRICULTURE

REPORT ON THE WORK OF THE DEPARTMENT OF AGRICULTURE

FOR THE YEAR

1946

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ANNUAL REPORT

of the

DEPARTMENT OF AGRICULTURE

DOMINICA

1946

PART I.

AGRICULTURE IN THE COLONY

POLICY

It is to be regretted that as yet it has not been possible to take any action in regard to the 10 Year Sketch Plans for Agriculture, Forestry and Fisheries, which were prepared last year. These plans will now have to be revised in the light of the known allocation of Development and Welfare funds to the Island, and it will be necessary to reduce drastically the estimated expenditure budgeted for in the original plans.

A statement setting out the broad lines of Agricultural Policy was published in last year's report (Appendix III). The extent to which it has been possible to implement this policy has of necessity been determined by the facilities of the Department in regard to staff and funds. The progress achieved is outlined hereunder:—

(i) *to protect, manage, control the use of and improve all forest areas prescribed in accordance with the advice of the various Government Departments and other interests concerned.*

The Forest, Soil and Water Conservation Ordinance was gazetted on 31st December, 1946. It makes provision for the conservation of the Forest, Soil, Water and other natural resources of the Colony. The enforcement of this legislation is dependent on the Forestry Scheme, which forms part of the 10 Year Plan.

(ii) *to encourage the proper use of land by the adoption and practice of systems of agriculture which will conserve the soil and improve its fertility by*

- (a) advising as to the allocation of production in accordance with the findings of a soil survey;
- (b) the investigation and demonstration of suitable systems of agriculture in the varying ecological conditions of the Island.

With regard to (a) this is outside the scope of the Local Department. Provision for detailed soil surveys has been made under the scheme for Centralised Research with Headquarters at the Imperial College of Tropical Agriculture. It is unlikely however, that it will be possible to put this work in hand for some time to come. A programme of work on lines as at (b) has been initiated on the Agricultural Stations. The Extension Service provided advice and aid to growers in Soil Conservation practices.

(iii) *to provide the means of regularising systems of land tenure for the protection of both the landlord and the tenant and the conservation of the soil by the enactment of appropriate legislation.*

It has not yet been possible to take any action in this connection.

POLICY.

(iv) to render advice, guidance and such other forms of assistance as may be practicable, in the production of staple commodities for export to the world's markets by

- (a) scientific investigation;
- (b) the distribution (within practical limits) of selected plant material;
- (c) the demonstration of suitable cropping methods;
- (d) the provision of technical advice in methods of processing;
- (e) the operation of a marketing organisation when this is necessary in the general interests of the community.

Experimental work in the course of the year included a Sugar Cane Variety trial, a manurial trial on Derris, and the laying down of an experiment on Vanillas with special reference to the control of Root disease. Work under (b) included the selection and multiplication of high yielding strains of Cocoa; and the importation of new varieties of citrus for trial under local conditions.

In addition a programme to increase the number of plants for distribution was drawn up and put into operation.

The Government Marketing Depot was in operation during the year.

(v) to encourage the abandonment of the undesirable and wasteful system of shifting cultivation commonly practised by small cultivators.

(vi) to encourage and to assist small cultivators to establish and maintain themselves under a permanent system of agriculture by

- (a) the demonstration of permanent systems of small scale agriculture;
- (b) facilitating whenever possible the provision of land to small cultivators for the practice of approved systems of agriculture;
- (c) by affording assistance whenever possible in the construction of houses and roads and the provision of water supply and other social amenities;

no real progress will be achieved until Land Settlement areas are established. Land Settlement Schemes formed part of the 10 Year Sketch Plan.

(vii) to encourage the practice of more stable systems of agriculture by

The operation of agricultural stations in various parts of the Island for the purpose of investigating and demonstrating methods of crop diversification, systems of crop rotation in short term cropping, mixed farming, the care and management of livestock, the preparation of pen manure and use of chemical manures, and the preparation and grading of produce for market.

Five agricultural stations have been established on a preliminary basis and the above objectives are being put into operation as circumstances permit.

(viii) to urge the increased home production of the basic food requirements of the people by

- (a) the distribution of suitable varieties of the more important food crops;
- (b) the demonstration of methods of producing food crops suitable for the preparation of a balanced diet;
- (c) encouraging the rearing of livestock and the greater consumption of animal products;
- (d) the demonstration of clean milk production.
- (e) assisting in the organisation of marketing and storage of food crops;
- (f) the introduction of protective tariffs for selected food crops or animal products whenever such action would be in the general interest of the community.

WEATHER CONDITIONS

Planting material of Yams and Sweet Potatoes together with seed of European vegetables were available at Agricultural Stations. The Demonstration Food plots on the Agricultural Stations are comprised of ground provisions, pulse and grain crops, in conjunction with the keeping of livestock. All stations were stocked with stud animals, poultry and rabbits, for the purpose of encouraging the local farmers to rear more livestock and thus increase the amount of animal products available for consumption. It has not been possible as yet to implement (d), (e) and (f).

(ix) to encourage the practice of efficient methods of production, processing and distribution of agricultural products by

- (a) the teaching of crop and animal husbandry in the schools;
- (b) the provision of facilities for training agricultural instructors, overseers and a nucleus of small farmers;
- (c) the demonstration of approved methods of agricultural production and livestock management;
- (d) the provision of facilities for obtaining agricultural credit;
- (e) the provision of technical advice in methods of processing;
- (f) the encouragement of the formation and operation of co-operative organisations of producers;
- (g) the adoption of measures to reduce the common practice of praedial larceny and ultimately to eradicate the evil.

The importance of (b) cannot be overemphasized and it is of interest to quote from the 'Report of the first meeting of the Agricultural Superintendents of the Windward Islands.'

"The meeting considers that the present position in regard to the source of supply training and emoluments of Agricultural Instructors is most unsatisfactory. There exists at present no organised training for such officers, consequently there is no reserve of trained personnel to draw upon."

"A training scheme on the following lines is recommended:—

- (x) the Agricultural Department in each Island should make provision for a 2-year course of apprenticeship training, the necessary qualification being a VIIIth Standard Certificate;
- (y) suitable candidates from the course mentioned in (x) to be sent to an approved training centre;
- (z) successful candidates to be appointed in the first instance as Apprentice Instructors and wherever possible to be stationed at the outset at District Agricultural Stations."
- (c) This is one of the functions of the Agricultural Stations.
- (d) Allowance has been made in the 10 Year Sketch Plan.

It has not been possible as yet to take any action with regard to (e), (f) and (g).

WEATHER CONDITIONS

General Climatic Conditions were favourable to agricultural production, especially for the Vanilla crop.

(b) **Rainfall.**— Returns for 23 recording stations were compiled and are shown in Appendix. The highest rainfall recorded was 247.45 inches at L'Eau Gomier, and the lowest was 43.63 at Colihaut Agricultural Station.

At the Botanic Gardens 73.07 inches was registered compared with 75.32 inches last year and the 20 year average of 75.84 inches. The dry months March, April and May totalled 7.53 inches as compared with 4.35 inches last year.

(c) **Barometer.**— The highest reading recorded was 30.12 inches on 5th June and the lowest was 29.67 on 12th November.

PRODUCTION AND EXPORT

(d) **Temperature.**— The highest maximum temperature recorded was 95° F. on 13th, 15th, 17th, 21st, 30th and 31st May and the lowest minimum 64° F. on 5th January.

(e) **Earth Tremors.**— An earth tremor lasting for 30 — 40 seconds was felt on May 21st at 0518 hours. No damage was caused, but was the most severe shock recorded since 1906. In the neighbouring French island of Martinique tremors were of a nature sufficiently severe to cause damage.

PRODUCTION AND EXPORT

Export statistics for the past six years are shown in the following table:—

TABLE OF EXPORTS FROM DOMINICA

AGRICULTURAL EXPORTS—DOMINICA 1941—43.

		1941		1942		1943	
		Quantity.	F.O.B. Value £	Quantity.	F.O.B. Value £	Quantity	F.O.B. Value £
Lime Products							
Concentrated Juice,	galls.	3,111	286	25,288	1,887	15,985	1,271
Raw Juice,	galls.	355,781	24,127	138,594	9,451	152,429	7,581
Lime Juice, Cordial	"	—	—	—	—	—	—
Distilled Oil	lbs	36,452	50,498	25,284	54,610	33,126	46,804
Eucelied Oil	"	525	1,111	354	976	960	2,231
Oils in Solution,	"	3,605	4,609	1,897	4,058	—	—
Green Limes,	brls.	6,101	9,654	828	1,880	605	756
Pickled Limes,	"	9	16	—	—	—	—
			90,501		72,862		58,643
Other Fruits and Allied Products :							
Oranges, C/crates		13,327	7,874	6,946	3,598	8,976	3,524
Orange Oil,	lbs.	1,112	747	217	165	1,703	1,230
Grapefruit, C/crates		8,596	4,008	3,019	1,144	5,243	1,800
Grapefruit Juice,	galls.	42	4	—	—	—	—
Bananas,	bunches	69,719	6,367	17,658	1,715	4,223	422
Mangoes, C/crates		8,929	1,830	2,689	668	3,982	1,169
Avocado Pears,	T crates	9,208	1,096	729	74	868	141
Miscellaneous		—	1,070	—	1,941	—	1,756
			22,796		9,305		10,042
Cocoa Products :							
Cocoa, Raw	lbs	407,441	6,347	250,973	6,318	401,819	6,960
Cocoa, Prepared	lbs	127	9	267	11	1,777	77
			6,349		6,329		7,037
Coconut Products :							
Copra,	lbs	403,220	1,726	453,214	3,395	591,892	6,977
Coconuts,	No.	1,193,710	4,521	645,349	3,436	359,046	2,244
			6,247		6,831		9,221
Sugar Products :							
Rum.	galls.	6,199	917	7,417	1,213	9,935	1,738
Bay Products :							
Bay Oil,	lbs.	50,870	8,050	24,657	5,523	31,222	6,270
Bay Rum,	galls	796	166	598	149	411	103
			8,216		5,672		6,373
Spices :							
Vanilla,	lbs	12,019	18,667	18,019	44,480	28,206	32,714
Nutmegs		—	—	—	—	—	—
Ginger		2,274	16	3,014	48	6,919	145
			18,683		44,528		39,859
Other Products :							
Coffee,	lbs.	455	12	4,699	131	4,536	132
Vegetables		—	—	—	—	—	—
Farine		—	—	—	—	—	—
Hides & Skins		—	—	—	—	—	—
Leather, Unmanufact'd		—	—	—	—	—	—
Turtle Shells		—	—	—	—	—	—
Tobacco, Cigars & Cigarettes,	lbs.	13,388	2,532	8,706	1,798	11,094	2,456
Miscellaneous		—	1,745	—	2,128	—	1,815
			4,289		4,057		4,483
Forest Products :							
Hardwood,	ft.	8,251	56	66,027	752	74,448	611
Firewood, Cords		394	150	781	363	1,609	1,100
Canoe Shells		—	—	—	—	—	—
Shingles		—	—	—	—	—	—
Charcoal		—	—	—	—	—	—
Locally made Boats	No.	—	—	—	—	—	—
Baskets		—	—	—	—	—	—
Other Forest Products		—	204	—	14	—	38
			410		1,129		1,749
Value of Local Exports :			158,203		151,926		139,095
Total Re-Exports			5,519		3,375		5,363
Value of Total Exports :			163,722		155,301		144,458

AGRICULTURAL EXPORTS—DOMINICA 1944—46.

		1944		1945		1946	
		Quantity.	F.O.B. Value £	Quantity	F.O.B. Value £	Quantity	F.O.B. Value £
Lime Products :							
Concentrated Juice,	galls.	2,673	219	50	4	182	1,887
Raw Juice,	galls.	189,415	19,308	317,318	33,534	283,113	9,451
Lime Juice, Cordial	"	—	—	19,745	—	—	51,610
Distilled Oil,	lbs	40,706	57,386	3,747	33,317	27,934	976
Ecuelled Oil,	"	1,739	4,264	1,582	10,318	2,941	4,058
Oils in Solution	"	—	—	727	2,562	195	1,880
Green Limes,	brls.	499	524	—	825	1,620	—
Pickled Limes,	"	—	—	—	—	—	—
			81,701		80,560		72,862
Other Fruits and Allied Products :							
Oranges, C/crates		9,912	7,283	9,326	5,159	9,521	3,598
Orange Oil,	lbs.	883	621	720	710	1,424	165
Grapefruit C/crates		7,572	3,501	7,294	4,092	5,219	1,144
Grapefruit Juice,	galls.	—	—	—	—	512	—
Bananas	bunches	4,047	394	4,132	314	3,602	1,715
Mangoes C/crates		3,958	1,215	3,294	825	5,940	668
Avocado Pears,	T crates	715	119	3,360	546	3,199	74
Miscellaneous		—	2,822	—	4,757	—	1,941
			15,955		16,433	200,213	9,305
Cocoa Products :							
Cocoa, Raw	lbs.	332,520	7,328	296,788	7,593	—	6,318
Cocoa, Prepared	lbs.	256	15	64	2	20	11
			7,343		7,595		6,329
Coconut Products :							
Copra,	lbs	509,400	7,712	560,765	9,095	670,663	3,395
Coconuts,	No.	895,031	5,594	1,476,496	11,832	387,069	3,436
			13,306		20,927		6,831
Sugar Products :							
Rum,	galls.	12,456	2,108	8,322	1,744	4,866	1,213
Bay Products :							
Bay Oil,	lbs	24,275	6,265	31,877	5,922	24,199	5,523
Bay Rum,	galls	287	73	195	60	170	149
			6,338		6,002		5,672
Spices :							
Vanilla,	lbs.	50,833	68,399	64,984	92,078	47,819	44,480
Nutmegs		—	—	—	—	—	—
Ginger		3,693	77	2,242	40	2,835	48
			68,476		92,118		44,528
Other Products :							
Coffee,	lbs.	2,459	81	658	22	142	131
Vegetables		—	—	—	—	—	—
Farine		—	—	—	—	—	—
Hides & Skins		—	—	—	—	—	—
Leather, Unmanufact		—	—	—	—	—	—
Turtle Shells		—	—	—	—	—	—
Tobacco, Cigars &		—	—	—	—	—	—
Cigarettes,	lbs.	5,028	1,124	8,111	2,168	787	2,128
Miscellaneous		—	5,349	—	3,003	—	—
			6,554		5,193		2,259
Forest Products :							
Hardwood,	ft	59,722	558	12,638	113	18,976	752
Firewood, Cords		2,064	1,732	2,242	2,242	227	36
Canoe Shells		—	—	—	—	—	—
Shingles		—	—	—	—	—	—
Charcoal		—	—	—	—	—	—
Locally made Boats	No.	—	—	1	3	—	—
Baskets		—	—	—	—	—	—
Other Forest Products		—	16	—	1	—	—
			2,306		2,359		788
Value of Local Exports :			204,087		232,931		
Total Re-Exports			6,247		8,196		
Value of Total Exports :			210,334		241,127		

PRODUCTION AND EXPORT

The monetary value of Exports for the year shows a decrease of 20.4% as compared with the previous year. Vanillas was for the second year in succession the most important single export and accounted for 36% of the total value of exports. Decreases were recorded for all commodities with the exception of Fruit and Forest Products.

Observations relating to the following industries are recorded below.

Limes.—Production of limes over the past six years, calculated as barrels of fruit is set out in the following table:—

PRODUCT	BARRELS OF FRUIT					
	1941	1942	1943	1944	1945	1946
Distilled Lime Oil ..	107,781	74,790	96,408	116,701	47,994	74,970
Ecuelled " " ..	4,200	2,832	7,680	13,912	29,976	23,552
Oils in Solution ..	12,017	6,323	—	—	5,273	682
Green Limes ..	6,101	828	605	499	727	—
Pickled Limes ..	9	—	—	—	—	1,771
	130,108	84,773	104,693	131,112	83,970	100,975

The figures for any one year do not necessarily represent annual production as there may be a carry-over of products at the end of a calendar year. Nevertheless the six year average of 105,940 barrels is a reliable guide to present production.

With the removal of the import quota on Lime Oil into the United Kingdom, little if any stocks of lime oil remained on hand at the close of the year. Although the year saw an increase in total limes exported, there was a downward trend in prices. The total value of Lime Products showed a decrease in value of £19,668 under the previous year. At the same time the quantity exported in terms of barrels of fruit showed an increase of 17,005 for the same period.

Vanillas.—Production of cured beans decreased by 17,165 lbs. as compared with the previous year. Prices remained firm, and no difficulty was experienced in disposing of stocks. The total exportable value of the crop was £21,958 less than the previous year.

Coconut Products.—The production of copra was 670,663 lbs. which represents an increase of 109,899 lbs. on last year's production. At the same time the export of nuts decreased by 1,089,427 for the same period. The total export value was £14,157 which represents a decrease of £6,770 compared with last year. The higher value of last year's crop is accounted for by the fact that Dominica was allowed to export nuts outside the British Caribbean area for a limited period, whilst copra driers were being erected. All Copra was exported to Barbados in accordance with the agreement which is in force until 31st January 1948. The price received was £35 per ton f.o.b.

Cocoa.—The production was 200,243 lbs. of raw cocoa, which represents a decrease of 96,545 lbs as compared with the previous year. The export value amounted to £3,876 which is a reduction of £3,719 on the previous year's value.

The statistical position of world Cocoa production indicates that there are good prospects of obtaining remunerative prices for this commodity for some years to come. Dominica offers good natural conditions for the establishment of a substantial cocoa industry. Such an Industry would contribute materially in improving the economic position of the Island. Accordingly Government is anxious to encourage the rehabilitation of the Industry along approved lines. Arrangements have been made for the Cocoa Agronomist, Windward Islands, to visit Dominica early next year to advise in preparing a scheme for the Improvement and Extension of the Cocoa Industry.

Bananas.—The Dominica Banana Association was again subsidised by a grant from Development and Welfare. The Association purchased 3,482 stems during the period September 1945 to August 1946. This represents a decrease of 12,672 stems as compared with the previous year.

The subsidy from Development and Welfare was terminated as from 30th August 1946.

Rum.—The production of rum has again showed an upward trend as the following table shows:—

1941	....	....	....	....	....	45,214 Gallons
1942	....	....	....	....	....	56,834 „
1943	....	....	....	....	....	74,120 „
1944	....	....	....	....	....	84,852 „
1945	....	....	....	....	....	91,898 „
1946	....	....	....	....	....	98,668 „

The quantity exported amounted to 4,866 gallons as compared to 8,322 gallons for the previous year. The amount collected in excise for the current year totalled £22,167, an increase of £1,273 over last year.

PESTS & DISEASES

Citrus.—No abnormal outbreak of any pest or disease was reported during the year. Withertip of limes (*Gloeosporium limetticolum*) continues to determine the ecological areas in which limes can be successfully grown.

Fruit—*puncturing moths*. In a communication received from Mr. R. G. Fennah, B.Sc., A.I.C.T.A., Entomologist, F.C.P.I., the following control measures are recommended for trial—

- (a) Spraying fruit with DDT Emulsion. The leaves of the tree may also be sprayed. The object of this is to ensure that moths do not live to bite twice.
- (b) Piling up cutlassed grass and bush during October, November or December in small heaps between the tree rows, and burning them at dusk during the critical months to provide a “smudge”, the smoker the better.
- (c) As a longer range policy, the planting of King or Mandarin Oranges around the fields, and when in fruit spray heavily with DDT Emulsion. These trees would act as a “trap-crop.”
Alternatively (or in addition) Governor Plum (*Flacourtia*) could be used, but would be rather large to spray when in fruit.

Vanilla.—*Fusarium Batatis* var. *Vanillae* continues to be the major limiting factor to vanilla production. The incidence of disease was not abnormally high during the year. Until further information is available the following control measures are recommended:

- (a) Use of long healthy setts for planting.
- (b) Correct degree of shading.
- (c) Avoidance of over pollination of flowers.
- (d) The application of crushed limestone at the rate of 6 lbs. to each plant on heavy clay acidic soils, and lesser quantities on less acidic and lighter soils.

Tobacco.—Tobacco Mosaic (*Nicotinana virus*) was found in a high percentage of plants at Hillsborough Estate.

Minor Crops.—Cabbage. The caterpillar of the Diamond-backed moth (*Plutella* spp.) was responsible for some loss to growers.

PART II.

WORK OF THE DEPARTMENT

PUBLIC GROUNDS

Grounds at the Library, Memorial Park, Morne Bruce and Military Cemetery were maintained in good order. In the Military Cemetery eight Cabbage Palms (*Oreodoxa oleracea*) were planted as replacements.

BOTANIC GARDENS

(a) **Decorative Section.**—This was maintained in attractive condition. Two introductions from Puerto Rico viz. *Bauhinia reticulata* and *Bauhinia variegata* flowered for the first time.

(b) **Economic Section.**—Crops grown in observation and multiplication plots comprise the following:—

- (i) *Sweet Potatoes* : Eight varieties viz. B 5, B 29, B 31, B 44, B 64, V 52 and Caroline Lee were maintained to provide plant material for distribution.
- (ii) *Yams* : The twelve varieties viz.—Lisbon 638, Bottle Neck Lisbon, Special Red Lisbon, Silk Yam, Barbados Lisbon, Oriental, Statia Rough, Statia Smooth, Moon, Moonshine, Horn and Seal Top were maintained to provide plant material for distribution. Barbados Lisbon, Special Red Lisbon, Lisbon 638, Seal Top and Moon gave the highest yields.
- (iii) *Pigeon Peas* : The two varieties Tobago and Lasaiba again gave good results and a further supply of seed was distributed.
- (iv) *Sweet Corn* : (U.S.D.A. 34) This variety again did well under local conditions.
- (v) *Cowpea* : Braham Cowpea was again tried with very good results. It can safely be recommended as a good leguminous crop, both for human and animal consumption.
- (vi) *Miscellaneous Beans* : Four varieties received from the Isabella Experiment Station, Puerto Rico viz. Native unselected Red, Native unselected White, No. 40 (Red), No. 84 (Red) were tried. The two latter showed sufficient promise for more extended trials.

Of the string beans, Kentucky Wonder, Bountiful and Stringless Green Pod continue to be the heaviest bearers.
- (vii) *Sugar Cane* : The following varieties received from the Plant Quarantine Station, Trinidad, were established: B 43391 and B 4362, the latter appears to be an exceptionally fast grower.
- (viii) *Tropical Kudzu* (*Pueraria phaseoloides*) : A further supply of seed was received during the year and a small plot established. Its performance under local conditions is very promising.
- (ix) *Indigofera endecaphylla* : A small plot was established, and it shows promise as a cover and a leguminous stock feed. This crop can be propagated by cuttings.
- (x) *Grasses* : The plot of Coloniao (*Panicum spectabile*) was extended, and has done extremely well and is relished by stock.

EXPERIMENT STATION

Cocoa.—Data concerning yield and self-compatibility were recorded from selected trees. Individual tree records were also continued at Picard Estate. Three very promising clones were discovered during the year on Clark Hall estate in the Layou Valley.

Cocoa budwood was received from Grenada and two selections i.e. G.S. 5 and G.S. 14 are now established.

During the year 99 plants consisting of 6 clones have been planted out in the nursery.

European Vegetables.—A variety of vegetables were grown in demonstration plots.

EXPERIMENT STATION

(a) **Limes.**—Particular attention was given to anti-erosion measures; contour drains were dug in all plots where necessary, and gullies were planted with Vetiver grass. Three new windbreaks were established.

Plot 5 which consisted of limes on Sour Orange Stock was replanted using Seville Orange (Gosport) stocks.

The crop amounted to 949 barrels as compared to 1,110 barrels for the previous year. Sale was by quarterly tender.

For purposes of comparison the previous year's prices are also quoted, the following prices being received each quarter.

	1945	1946
1st Quarter	11/6	11/6
2nd " 	11/6	11/6
3rd " 	11/6	8/8
4th " 	11/6	8/8

(b) **Cashew Nuts.**—The plot continues to make excellent progress. A small quantity of fruit was reaped.

PLANT DISTRIBUTION

Plant nurseries were established at the following places during the year: Botanic Gardens, Goodwill Estate, District Agricultural Stations, Petite Coulibri, Point Michel, Mahaut, Vieille Case, Atkinson, Rosalie and Delices. Plants distributed during the current year are detailed below:

(a) BUDDED OR GRAFTED PLANTS

Washington Navel Orange ..	2,376 plants
Other Oranges ..	1,877 "
Grapefruit ..	850 "
West Indian Limes ..	7,588 "
Other Citrus ..	359 "
Avocado Pears ..	400 "
Mangoes ..	176 "
	13,626 plants

Other Economic Plants.

Sour Orange Stocks ..	3,150 plants
Seville Orange Stocks ..	4,700 "
Wild Grapefruit Stocks ..	31,471 "
Rough Lemon Stocks ..	—
Coconut Seedlings ..	211 "
Nutmeg Seedlings ..	2,416 "
Cocoa Seedlings ..	6,192 "
Coffee Seedlings ..	3,864 "
Cocoa Pods ..	35 pods
Fodder Grass ..	4,855 cuttings
Sweet Potato ..	16,830 "
Sugar Cane ..	19,087 "
Yams ..	2,438 lbs.
Miscellaneous ..	254 plants
European Vegetable Seeds ..	173 lbs.

PLANT INTRODUCTIONS

Seeds and plant material introduced during the year comprised the following:			
Myristica fragrans	8	Lbs.	A planter, Grenada.
Pimenta Officinalis	1	lb.	"
Tangelo seed	1	Pkt.	A Planter, Grenada
Red Beans, Native Unselected	1	Pkt.	Isabela Expt. Station Puerto Rico.
Red Beans, Native Selected No. 40	1	Pkt.	do.
Red Beans, Native Selected No. 84	1	Pkt.	do.
Egg Plant "Rosita"	2	ozs	do.
White Beans, Native	1	Pkt.	do.
Cucumber, P. R. No. 39	1	Pkt.	do.
Indigofera endecaphylla	1	lb.	Mayaguez Expt. Station, Puerto Rico.
Pueraria Phaseoloides	1	lb.	do.
Pueraria Javenica	1	lb.	do.
Molasses grass	2	ozs	do.
Sweet Corn No. 2 U.S.D.A34	1	Pkt.	do.
Cymbopogon nardus (Citronella grass)	2	ozs	do.
Coffea Arabica (Columnaris V. A. R.)	1	oz.	do.
Kopsia fruticosa	3	seeds.	do.
Aristolochia argyronevra	1	oz.	do.
Cauliflower "Early Patna"	1½	lbs.	Director of Agriculture Windward Islands.
Sugar Cane — B 43391	6	cuttings	Plant Quarantine Station, Trinidad
Sugar Cane — B 4362	6	cuttings	do.
Various Ornamentals	20	Pkts.	New York Botanical Gardens, Bronx Park, N.Y.
Various Ornamentals	10	Pkts.	Bureau of Entomology & Plant Quarantine, U.S.A.
Calamondin	100	bud eyes	Armstrong Nurseries, California.
Ruby Grapefruit	100	" "	do.
Sampson Tangelo	100	" "	do.
Armstrong Seedless Valencia	100	" "	do.
Glenred Grapefruit	100	" "	Glen Saint Mary Nurseries CO., Florida.
Minneola Tangelo	100	" "	do.
Parson Brown Orange	100	" "	do.

Of special interest are the new citrus varieties which are briefly described hereunder. (Abstracted from "The Citrus Industry" by Webber & Batchelor).

Calamondin (*Citrus Mitis*).— This belongs to the *Mitis* group, and is presumed to be a variant mutation from some mandarin type. It was introduced into Florida as the "Panama Orange"; in Hawaii it is known as the "Chinese Orange". The fruit are used for making marmalade and an acid drink.

The Calamondin has been mentioned as a promising hardy stock in Texas, especially for the lime, and is said to develop the most pronounced and the deepest penetrating taproot of any common citrus variety. The main purpose in introducing this variety is to test its suitability as a root stock for the lime.

Cleopatra (*Spice Tangerine*).— This variety belongs to the *Tangerine* group. It has been used as a rootstock in Florida with some success. Its suitability as a rootstock under local conditions will be tested.

Tangelos.— These comprise a new group of citrus fruit which was formed to include hybrids of the tangerine or mandarin orange (*Citrus reticulata*) with either grapefruit or pummelo (*Citrus paradisi* and *Citrus Grandis*). The fruit is described as highly coloured, aromatic, richly flavoured, sprightly acid only slightly bitter, and very juicy.

Tangelo fruits in general are delicate and consequently are poor shippers but owing to their high flavour have attracted special attention as juice fruits.

LIVESTOCK

It is interesting to note that Tangelo in general are mainly self-sterile, and as they produce a high percentage of nucellar embryos they reproduce nearly true to seed. Their suitability as root-stocks under local conditions will be tested.

Ruby Grapefruit.— This variety originated as a bud sport from the Thompson. The fruit is similar in almost all characteristics to the latter, except that it shows a pronounced crimson flesh on its smooth rind and has finely textured pulp of ruby hue.

Armstrong (Armstrong Seedless Valencia).— The new strain originated as a bud sport from a normal Valencia. The patent and distribution rights to the strain belong to the Armstrong Nurseries of Ontario, California. As a late fruit this seedless Valencia should prove to be a valuable addition to the orange crop.

LIVESTOCK.

(a) **Stud Animals.**— The following table sets out the number of animals and the areas in which they were stationed during the year:—

Location of Stud Centre	Type of Animal				
	Bull	Sheep	Goat	Stallion	Pig
Roseau					
(Botanic Gardens) ..	1	1	—	1	—
Londonderry					
(Agric. Station) ..	1	1	—	—	—
La Plaine					
(Agric. Station) ..	1	1	1	—	—
Colihaut					
(Agric. Station) ..	—	—	1	—	—
Grand Bay					
(Agric. Station) ..	1	1	—	—	1
Portsmouth					
(Agric. Station) ..	1	1	—	—	—
Totals	5	5	2	1	1

The operation of Stud Centres is the main livestock activity of the Department, for the following table sets out the return of services for the year.

Animal	Number of Services and Year			Total 3 years
	1944	1945	1946	
Bull	153	331	478	962
Sheep	93	136	79	308
Goat	145	56	50	251
Horse	5	30	22	57
Pig	—	—	36	36

(b) **Poultry.**— Six pens of pure bred poultry were maintained at the Botanic Gardens and in addition one pen each at District Centres. Egg distribution showed an increase over the previous year. The following table sets out the distribution during the past three years.

Year	1944	1945	1946	Total
Eggs distributed ..	717	1,376	1,836	3,929

D (c) **Ducks.**—The Pekin ducks introduced from Trinidad have continued to make satisfactory progress. Eggs distributed totalled 352 for the year.

(d) **Rabbits.**—Rabbitrys were maintained at five Agricultural Stations and in the course of the year 128 services were given and 35 rabbits distributed. A high mortality rate of young rabbits was recorded during the year from all Departmental rabbitrys.

EXTENSION WORK

This consists in the supply of advice to all growers through personal visits, demonstrations plots and all other appropriate measures. It is agricultural education in its broadest aspect.

(a) **Advisory.**—The district organisation continued to work satisfactorily, but it is becoming evident that an increase in the district staff will be necessary in order to provide adequate agricultural service to meet the needs of the peasantry. The difficult nature of the country coupled with poor communications, restricts the size of the area which one instructor can adequately cover. All members of the staff were concerned in district work and paid visits to small holdings and estates, and the frequent demands for help and advice, are an indication of the confidence in the Department of the planting community.

The lack of group activities continues to be a serious limiting factor in the dissemination of advice. The 4 H Club movement has made slight progress.

(b) **Agricultural Stations.**—Five stations have now been established and are being operated on a preliminary basis. At each station the following buildings have been erected:

- (i) District Instructor's quarters.
- (ii) Apprentice's quarters.
- (iii) Storeroom and office.
- (iv) Stabling for Livestock.

The various objectives as detailed previously are being put into operation as circumstances permit.

(i) **Plant Nurseries.**—Plant material was available for distribution to growers in all districts. (For details see "Plant Distribution.")

(ii) **Livestock Improvement.**—Stud animals are installed at all stations and have been available to stock-owners. (For details of services see "Livestock".)

(iii) **Observation Plots** were put down at all stations.

(iv) **Demonstration holdings** which have as their object the teaching of "mixed farming" including conservation measures have been maintained.

(v) **Investigational Work.**—The results of a manurial experiment designed to supply basic data for mixed farming in the Wet Tropics is summarised in Appendix III.

SOIL CONSERVATION

The need for conservation measures is being admitted by an increased number of growers, and in all districts instructors have given advice and help in the layout of contour drains and other anti-erosion measures.

The conservation measures adopted on the Estate referred to in last year's report, have proved wholly successful and has served as a demonstration to other growers.

Wastage of forest resources continues unchecked, this is particularly evident in the Northern District, the principal area from which cordwood is exported to Barbados. Attention must be called to the urgent necessity of appointing the necessary staff to give effect to the Forestry Legislation.

AGRICULTURAL EDUCATION

(a) **Pupil Apprentice Course.**—Eighteen pupils were in attendance throughout the year. Seven completed the course and six new ones were enrolled.

(b) **Refresher Course.**—A refresher course for Agricultural Instructors was held in Roseau from 2nd to 5th April.

(c) **Periodicals.**—The following periodicals were received and circulated amongst the staff.—

The Smallholder and Home Gardening.

The Journal of the Jamaica Agricultural Society.

The Farm Journal of British Guiana.

Proceedings of the Agricultural Society of Trinidad and Tobago.

The Negro Farmer.

The American Small Stock Farmer.

LABORATORY

Return of chemical analyses and tests are set out hereunder.

Product	Type of Test	No. of Samples
Milk	Analysis ..	75
Lime Oil	Sp. Gravity ..	—
Lime Juice, Conc. ..	Citric Acid content ..	—
Lime Juice, Raw ..	" " "	29
Bay Oil	Phenol content ..	10

MANAGEMENT OF GOVERNMENT OWNED ESTATES

(a) **Hampstead Estate.**—In accordance with Government policy this estate was sold during the year. It was officially handed over to the purchaser on 27th May.

This Estate was originally taken over by Government in 1942 in lieu of debt. It was independently managed until 31st March 1945, after which date the Department assumed control. A financial summary concerning the period of Government ownership is set out below.

Total debt of Estate when taken over by Government ..	£ 7,997. 14. 2
Deficit on year's working	62. 0. 2
	£ 8,059. 14. 4
Proceeds from sale of estate	£ 8,500. 0. 0
Profit on year's working 1943	278. 5. 0
" " " " 1944	379. 15. 2
" " " " 1945	1,010. 15. 4
" " " " 1946	623. 16. 9
(Jan.—May)	
	£ 10,792. 12. 3

Thus in addition to recovering the debt there accrued to Government a surplus of £2,732. 17. 11.

(b) **Melville Hall Estate.**—The cultivation was maintained in accordance with normal estate practice. A development plan of modest dimensions was commenced. This includes (a) the extension of the present area under coconuts by supplying all missing plants in already existing coconut fields. (b) planting of 5 acres of Dwarf coconuts (c) planting of 5 acres of cocoa (d) raising of pigs.

A type 15 Malayan Copra drier was constructed as the existing drier was inadequate to deal with the present production of nuts.

During the year one pair of graded Large Black pigs were obtained from St. Lucia, and one Canadian Berkshire boar and two gilts from British Guiana.

Unfortunately the Berkshire boar was stolen before he became serviceable. The graded Large Black sow produced a litter of eight.

Labour.—A shortage of labour was experienced during the year. This shortage was most acute while work was in progress on the air field site.

The following produce obtained from the estate was disposed of during the period 1st January to 31 December.—

Coconuts	....	106,264 nuts
Copra	....	62 tons
Limes	....	168 barrels
Grapefruit	....	7,353 fruit

The gross revenue amounted to £2,129. 15s. 4d. and ordinary expenditure to £1,527. 15s. 3½d resulting in a nett profit of £602. 0s. 1½d. Capital expenditure amounted to £328. 13s. 11½d.

(c) **Goodwill Estate.**—This estate adjacent to the Capital town of Roseau was acquired by Government in the course of the year. The total area is 435 acres including the suburb of Pottersville. At the time of acquisition the agricultural portion comprised approximately 25 acres of Limes, 125 acres of Sugar Cane and provision gardens, and a few scattered trees of Cocoa and Mangoes. A factory in moderately good condition has equipment for the manufacture of Lime products and Rum.

It is the present intention of Government to utilize some 250 acres in implementing various schemes under the Development and Welfare Act. Until such time as these schemes are finalised the estate has been placed under the charge of the Agricultural Department. The Estate was formerly taken over on 1st May and a manager appointed on 1st July. During the interim period the Senior Agricultural Instructor carried out the duties of manager in addition to his own.

CONFERENCE OF AGRICULTURAL SUPERINTENDENTS, WINDWARD ISLANDS.

The first meeting of the Agricultural Superintendents of the Windward Islands was convened by and held under the Chairmanship of the Director of Agriculture.

The meeting was arranged in two parts. The first part was held in Grenada from November 28 to December 5 and the second part in Barbados from December 11 to 19.

In Grenada the delegates were afforded the opportunity of visiting and inspecting the Agricultural Stations and Cocoa propagating units. In Barbados the delegates attended the Annual Agricultural and Industrial Exhibition at which the Island's best livestock were on show. Visits were also made to the livestock stations of the Department of Agriculture.

Finally the delegates were granted an interview with the Agricultural Adviser to the Comptroller for Development and Welfare when some of the more important problems of agricultural development in the Windward Islands were discussed.

STAFF NOTES

Mr. L. L. de Verteuil, Agricultural Superintendent was on duty leave from November 24, to December 19 and on vacation leave from December 19 to December 31. During this period Mr. A. V. Wan Ping, Agricultural Assistant performed the duties as Officer-in-Charge of the Department.

Mr. A. V. Wan Ping was absent from the Colony on vacation leave from 13th May to 8th June.

Mr. R. R. Winston, 2nd Class Clerk continued to act for Mr. C. A. Seignoret who was on continuous secondment to the Census staff. Mr. V. E. White, District Instructor, relinquished his appointment on 30th September to enter the Imperial College of Tropical Agriculture as a Diploma Student. Mr. J. A. John Assistant Instructor was promoted to fill the vacancy thus created. Messrs. W. G. Coipel and R. J. Cuffy were appointed Assistant Instructors as from 1st October.

ACKNOWLEDGMENTS.

I am happy to have this opportunity to record the gratitude and appreciation of the Staff of the Department to the officials and unofficials alike who have co-operated in the work of the Department.

The local press has rendered valuable service in giving publicity to the Department's activities. The thanks of the Department is also extended to planters for their hospitality to visiting officers.

Finally I wish to pay tribute to the continued loyalty and good work of the Staff.

L. L. de VERTEUIL,
Agricultural Superintendent.

APPENDIX 1.

GOVERNMENT MARKETING DEPOT

Fruit Trade.

Though it must be admitted that our hopes for a general increase in the volume of fruit shipments in the first few years after the war have not been realised, there was some indication of the business stimulus that resulted from the satisfaction of consumer demand in the more lucrative fruit markets.

Undoubtedly the continued lack of shipping facilities again set limitations to the extent to which it was possible for us to participate in this trade revival, and it is gratifying to be able to record our achievement during the summer months of three commercial shipments of fresh limes to the Canadian markets of Montreal and Toronto.

These consignments were forwarded in cold storage which accounted for a much improved out-turn condition. Except for the last shipment which arrived too late to catch the summer sales the fruit were disposed of at prices which netted satisfactory returns to the shippers.

The orange and grapefruit industry however continued to be handicapped by the almost wholly lack of shipping during the Summer and Main season crops. Owing to this circumstance it has not been possible to resume our trade with Bermuda and though it might have been possible to get off some fruit for sale in the Canadian market, the unsuitability of storage space, uncertainty of calls and excessive freight rates were all factors which placed us in a most unfavourable competitive position to explore the possibilities of the Canadian market.

It is therefore not surprising that the Depot activities were directly concerned with the exploitation of West Indian markets. Regular shipments were forwarded to our agents in Barbados and efforts were made to establish agents in the other islands. As a result one trial shipment of Washington Navel Oranges was forwarded to Demerara in late December. The experiment was however of little value owing to the fact that it was not possible to obtain suitable cargo space, the effects of which were further aggravated by the delay of the ship caused by dock workers strike in Trinidad. Replies from the other islands were discouraging either from a point of view of price or the quantities that were likely to be disposed of.

Under these circumstances the most hopeful line as to concentrate on the potentialities of the Barbados market. In this connection it has become evident that no further increase in trade can be expected through a commission merchant selling to retailers. The apparent lack of co-operation between retailers sets limits to the expansion of the trade.

In accordance with the policy of exploiting West Indian Markets to the fullest extent possible, it was agreed to set up a Marketing Agency in Barbados to

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be jointly operated by the Governments of Dominica and St. Lucia. It is hoped that this organisation will be in operation next year.

Consignments of mostly oranges were forwarded to Antigua and St. Kitts as regularly as sailing opportunities would permit.

The total number of crates (all types) packed during the year was 11,197, which shows an increase of 5,216 when compared with the previous year.

The quantities were destined as follows:—

Canada	....	4	consignments	8,770 crates.
Barbados	....	11	"	1,746 "
British Guiana	....	1	"	46 "
Leeward Islands	....	15	"	600 "
Other Islands	....	7	"	35 "
				<u>11,197 crates.</u>

A comparative statement of fruit packed by the Marketing Depot for the past five years is detailed below. All crates have been calculated as standard citrus crates (2' 8" cub.)

Produce	Canada	Bermuda	W. I. Islands	Totals
1942				
Oranges— Crates.. ..		577	1,326	1,903
Grapefruit "		237	53	290
Limes "	12	60	—	72
Bananas—bunches		114*	58	172
Other			80	80
	12	988	1,517	2,517
1943				
Oranges— Crates.. ..			1,113	1,113
Grapefruit "			265	265
Other			60	60
			1,438	1,438
1944				
Oranges— Crates.. ..		800	2,791	3,591
Grapefruit "		640	630	1,270
Limes "		400	1	401
Other "			85	85
		1,840	3,507	5,347
1945				
Oranges— Crates.. ..	218	—	3,245	3,463
Grapefruit "	329	500	1,223	2,052
	547	500	4,468	5,515
1946				
Oranges— Crates.. ..			2,517	2,517
Grapefruit "	18		29	47
Limes "	2,913			2,913
Other "	10		9	19
	2,941		2,555	5,496

War Emergency Work.

The staff of the Depot continued to be actively engaged on Emergency Control work which include (a) Price Control, (b) Slaughter of Livestock, (c) Meat and Fish Control, (d) Meat Rationing, (e) Guarantee to Purchase and Marketing of Surplus Products, (f) Advances to Butchers, (g) Subsidy to Livestock and (h) Subsidy to Fishing Industry.

Other duties involving special enquiries devolved upon the Officer-in-Charge who has been appointed an Authorised Agent for the purpose.

Vanilla Inspection.

All sales of Vanilla in Roseau were supervised and recorded by the Staff of the Depot, and the total exports of cured Vanilla was inspected for quality, and weights checked prior to shipment.

Meetings, Boards, etc.

Weekly meetings of the Valuation Committee of Export Values and six meetings of the Fruit Trade Committee were attended by the Officer-in-Charge.

General.

The Cold storage and Ice Making Plant was maintained in running order.

G. A. WINSTON,
Officer-in-Charge
Government Marketing Depot.

APPENDIX II.

AGRICULTURAL LEGISLATION

The Forest, Soil & Water Conservation Ordinance, No. 14 of 1946.

Vanilla (Purchasing Depot) Order. (S.R. & O. No. 40 of 1946).

Exportation of Agricultural Produce (Amendment) Rules (S.R. & O. No. 41 of 1946).

APPENDIX III.

SUMMARY OF INVESTIGATIONAL WORK CARRIED OUT DURING YEAR

(a) Sugar Cane Variety Trial.

The first sugar cane variety trial to be designed in accordance with the modern concepts of experimental layout was put down on Souffriere Estate by kind permission of and in co-operation with the owners of the Estate.

Objects.—The object of the experiment was to test five cane varieties using BH 10/12 as the standard.

Layout.—The layout was 5 x 5 Latin Square.

Site and Soil Type.—The experimental area was a flat of alluvial soil, which was originally under cocoa.

Rainfall.—The annual rainfall is approximately 100 ins.

Manurial Treatment.—One application of mixed fertiliser 5:10:5 at rate of 4 cwt. per acre two months after planting.

Results.—Plant canes were reaped on 4th to 5th April, 1946, when approximately 13 months old, and the yield data are summarized hereunder.

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Variety	Tons Cane per acre	Tins Syrup* per acre
B. 37161	76.33	301.5
B. 3439	65.13	267.5
B. 35187	43.64	170.5
B. 35245	39.46	169.2
B. H.10/12	31.97	143.7

*1 tin = 4 gallons.

Based on statistical analysis of the yield data, varieties fall into two distinct classes: Group (A) B. 37161, B. 3439 and Group (B) B 35187, B 35245, BH 10/12. There is no significance within the groups but Group (A) is significantly better than Group (B).

This experiment will be continued as 1st and 2nd ratoons.

(b) The use of Organic Manures under heavy Rainfall Conditions.

It has been accepted that "Mixed Farming" is to be adopted as a system of Agriculture in the West Indies. Before this system can be introduced to growers, however, certain fundamentals have to be worked out; to quote from the "Agricultural Policy Report of Trinidad and Tobago", "Scientific investigation, aiming at determining the basic principles upon which practical systems of mixed farming in the Tropics may be evoked, including the study of the whole problem of soil management and land utilization, combined with the maintenance of soil fertility . . .". The proper utilization of organic manure for the maintenance of soil fertility has to be determined. With a view to obtaining data on this aspect of the problem in Dominica, experiments were laid down in two areas having different rainfall conditions viz: 75 inches per annum and 120 inches per annum.

Object.—To compare the effectiveness of applying the three main plant foods i.e. Nitrogen, Potash and Phosphate in the form of

- (a) Fully rotted pen manure.
- (b) Unfermented pen manure.
- (c) Mulch plus Sulphate of Ammonia.
- (d) Complete inorganic manure.

Experimental procedure.

Design.—The experiment was planned as a 5 x 5 Latin Square.

Site.—The experiment was put down at (a) The Morne, with an average rainfall of 75 inches per annum and (b) Londonderry Agricultural Station, having an average of 120 inches per annum.

Index Crops—Sweet potatoes (*Ipomea batatas*) followed by Maize (*Zea Mais*) was the order of cropping in both cases.

- Treatments.**
- A. Pen manure at the rate of 10 tons per acre.
 - B. Unfermented pen manure at the rate of 10 tons per acre.
 - C. Grass clippings at the rate of 10 tons per acre or per plot, plus Sulphate of Ammonia at the rate of 4.7 cwt. per acre.
 - D. Complete inorganic manure at the rate of

Sulphate of Ammonia	— 4.7 cwt. per acre.
Superphosphate	— 3.1 " " "
Sulphate of Potash	— 2.1 " " "
 - E. Control.

Note.—These treatments have been worked out on a basis of chemical equivalent.

Yield Data.

In measuring the yield of the crops account was taken both (a) Tubers and vines in the case of Sweet Potatoes and (b) Cobs and stalks in the case of Maize.

Summarised Results.

(a) *Experiment at the Morne*.—Rainfall 64.14 inches during course of two crops (253 days).

(i) With a rainfall of 64.14" in 253 days fully rotted pen manure at the rate of 10 tons per acre exerted a significant yield increase on two successive crops.

(ii) Application of unfermented plant material in the form of grass, plus sulphate of ammonia resulted in a significant increase over the control, in the first crop, but there was no residual effect on the second crop.

(iii) The application of a complete inorganic manure (Treatment D) accelerated the vegetative growth of Sweet Potatoes, but exerted a depressing effect on the yield of tubers. No residual effect on the 2nd crop resulted, as presumably all the extra nutrients supplied, were (a) utilized by the first crop and (b) leached away by the heavy rainfall.

(b) *Experiment at Londonderry*.—Rainfall 90.11 inches during course of two crops (276 days).

(i) Pen Manure (Treatment A) (a) failed to produce a significant yield increase on sweet potatoes when measured by tuber weight though it resulted in a significant increase in weight of vines and vines and tubers.

(ii) It produced a significant residual effect on the second crop.

(ii) Neither unfermented pen manure (Treatment B) nor grass clippings plus Sulphate of Ammonia have shown either immediate or residual effects.

(iii) Complete inorganic manure (Treatment D) resulted in similar immediate and residual effects to that of pen manure.

Summarised findings.

- (1) Pen manure (Treatment A) gave both immediate and residual effects under ecological conditions obtaining at both experiments.
- (2) The intensity and amount of rainfall may determine whether it is necessary to use fully rotted pen-manure, the indication being that under rainfall conditions of the order of 90.11 inches in 276 days conditions are not favourable for fermentation, and it is therefore preferable to use fully rotted pen manure, whilst under conditions of Experiment I, where the rainfall was 64.14 inches in 253 days unfermented pen manure may be equally effective.
- (3) Grass plus Sulphate of Ammonia (Treatment C) has failed to prove an effective alternative to fully rotted pen manure.
- (4) The inorganic manure (Treatment D) as used in this experiment has not produced comparable effects to pen manure. The use of smaller doses, in more than one application, as well as the use of forms which release their nutrients at a slower rate, may prove to be more effective.

(c) Tobacco.

The small trial plots at the Agricultural Stations at Grand Bay, La Plaine, Portsmouth and Londonderry were reaped during February—March and the crop air dried. A total of 512 lbs. of dried leaves was sold to Messrs. Jas. Garraway & Co., Ltd. of Roseau, the price obtained being 1/3 per lb.

The yields and cost of production at the four stations are presented in the following table:—

Station	Yield per acre lbs.	Cost of Production per lb.
Grand Bay	582	2/11
La Plaine	440	2/4
Portsmouth	404	2/5
Londonderry	428	3/6

APPENDIX

These figures compare most unfavourably with the production figures from the principal tobacco producing countries but of the varieties tried, the White Burley for cigarette leaf and Tjetock for heavy leaf, appear to be promising, and the tests are to be repeated on a larger scale.

The nurseries for the 1946—1947 crop however were badly damaged by the heavy November rains and almost destroyed. Fresh sowings were made in an attempt to grow a crop out of season.

Seed and seedlings were distributed free of charge to interested peasants, from the La Plaine Station, and in the Vieille Case area. All of the leaves thus grown were used for domestic and local consumption and did not reach the Roseau market.

(d) **Derris.**

Samples of Derris root grown at the Botanic Gardens were forwarded to the Imperial Institute for analysis of their rotenone content and an indication of their commercial value. The report is set below.

Results of Examination of Derris Roots.

	Present Samples*						Previous Samples**		
	Sample C.C.3			Sample F.C. 3G.			Derris Elliptica	Derris Malaccensis	
	Roots up to $\frac{3}{8}$ " diam. per cent.	Roots over $\frac{3}{8}$ " diam. per cent.	Whole Sample per cent.	Roots up to $\frac{3}{8}$ " diam. per cent.	Roots over $\frac{3}{8}$ " diam. per cent.	Whole Sample per cent.		Erect per cent.	Climbing per cent.
Proportion of Sample ..	43.4	56.6	100	39.1	60.9	100			
Moisture ..	6.1	6.0	6.0	7.1	7.6	7.4	8.3	6.4	6.0
Chloroform Extract: expressed on roots as re- ceived ..	14.4	8.9	11.3	12.0	5.1	7.8			
Chloroform Extract: expressed on moisture - free roots ..	15.3	9.5	12.0	12.9	5.5	8.4			
Rotenone: expressed on roots as re- ceived ..	4.18	2.19	3.05	3.46	0.57	1.70	0.6	2.0	3.6
Rotenone: expressed on moisture - free roots ..	4.45	2.33	3.24	3.73	0.62	1.84	0.7	2.1	3.8

* Examined by the method of Coomber, Martin and Harper (J.S.C.I., 1942, 61, 110)

** Examined by the method of Georgi and Teik (Department of Agriculture, Straits Settlements & Federated Malay States, Publication, Scientific series No. 12, 1933).

Remarks

The results of examination show that both the present samples of derris root contain a low percentage of rotenone and extract and are below the standard of derris roots of commerce. At present all supplies of derris for the United Kingdom are purchased by the Ministry of Supply for distribution in this country. The price is one shilling and a penny per lb., f.o.b., for consignments containing 5 per cent of rotenone, with a deduction of one-fifty of a penny per lb. for each one-tenth of a per cent of rotenone below 5 per cent, and a corresponding premium above.

The Ministry of Supply are prepared to purchase derris root containing 3.5 per cent and over of rotenone, preferring at least 4 per cent, but they have stated that material containing only 3.05 per cent, as in sample C.C. 3, would not be acceptable, while root with only 1.7 per cent of rotenone, as sample F.C. 3G, is far too inferior to be of commercial interest.

Commercial derris normally furnishes a chloroform extract of 17 per cent or over although, on occasion, roots containing a satisfactory amount of rotenone combined with a somewhat lower chloroform extract have been examined at the Imperial Institute.

Although no information is provided concerning the ages of the present roots when they were harvested, their appearance, taken in conjunction with the results obtained from the analyses of the sub-divided roots, suggests that both samples of roots had been allowed to grow for a period considerably in excess of that required to yield an optimum rotenone content and this has resulted in a deterioration in the value of the root.

The most favourable time to lift derris root must depend to a large extent on local climatic conditions. Analyses have shown that, in general, the maximum yield of rotenone may be expected when the greater part of the root system has reached a thickness of $\frac{3}{8}$ inch in diameter which, in most localities in which derris is grown, may be attained in anything from 2 to 4 years. It will be seen from the table that the roots up to $\frac{3}{8}$ inch diameter yielded considerably more rotenone and chloroform extract than did the larger roots and should any further planting be carried out it would appear that a considerable improvement could be obtained if trial liftings could be made at, say, six monthly intervals from $1\frac{1}{2}$ years onwards with a view to working out the optimum stage for lifting the roots of each strain.

(e) Manilla Hemp (*Musa textilis*).—

The number of trial plots was brought up to six by the establishment of an additional plot during the year. Plants of the variety Bungalanon received from the Quarantine Station, Trinidad, in 1944, were used for half of the plot.

Samples of Fibre obtained from the Riversdale plot, which was planted in 1944 were sent to the Imperial Institute for a report as to quality and commercial value.

This report is set out herewith.

Description.

Sample A.—"A. $10\frac{1}{2}$ ozs. Manilla Hemp. Extracted from 3 stems weighing 69 lbs. From Botanic Gardens, Roseau, Dominica, B.W.I."

Weight when received at the Imperial Institute, $10\frac{1}{2}$ ozs.

Sample B. "B. 13 ozs. Manilla Hemp. Extracted from 3 stems weighing 69 lbs. From Botanic Gardens, Roseau, Dominica".

Weight when received at the Imperial Institute, $13\frac{1}{2}$ ozs.

Sample A was well prepared, clean, and of good colour, being cream and bright. The fibres were well separated and there were no hard runners. Length about 7 feet. The strength was variable but in general fair.

Sample B was similar to Sample A but was not so well cleaned. The general length was about 8 feet. The strength was good.

Results of Examination.

The better prepared sample, viz. "A", was submitted to chemical examination. The results are shown in comparison with three grades of commercial Manilla hemp previously examined at the Imperial Institute:—

	Present Sample A	Commercial Samples of Manilla Hemp examined at the Imperial Institute		
	per cent.	F per cent.	G per cent.	LI per cent.
Moisture —				
Calculated on the moisture free fibre	10.2	10.7	10.6	8.9
Ash —	1.3	1.5	1.9	3.2
d-Hydrolysis (1 per cent Na ₂ O solution for 5 minutes)	16.5	13.4	12.3	12.9
B-Hydrolysis (1 per cent Na ₂ O solution for 60 minutes)	22.6	20.2	19.2	19.3
Water washing loss	4.1	2.4	3.5	5.3
Cellulose	73.3	76.9	74.5	74.8

Ultimate fibres were prepared from the samples and examined. They were found to have the following dimensions, which are shown in comparison with the recorded figures for commercial Manilla hemp:—

	Length in mm.			Diameter in mm.		
	Maximum	Minimum	Average	Maximum	Minimum	Average
Present Sample	6.6	3.7	5.2	0.034	0.012	0.020
Commercial Manilla hemp ..	12.0	3.0	6.0	0.032	0.016	0.024

The present sample has slightly higher d and B hydrolysis losses than the commercial samples of Manilla hemp quoted above, and a somewhat lower cellulose content. The ash content is satisfactorily low. The water washing loss is fair. These figures indicate a slight inferiority in composition and durability in comparison with the grades of commercial fibres which have been quoted. The dimensions of the ultimates do not differ materially from the recorded figures for commercial samples of Manilla hemp from the Phillippines.

Commercial Valuation.

The samples were submitted to two firms of fibres merchants, whose representatives are members of the Imperial Institute Consultative Committee on Vegetable Fibres. Their reports are as follows:—

1

"Sample "A"

Length, average 6 ft.

Cleaning, good with minor defects

Texture, fine

Strength, fair but some weakness apparent

Colour, light to dark cream with proportion almost white.

Generally, the sample contains a mixture of fibre of quality approximately equivalent to Davao I, Davao JI, Davao S2 and Davao G. The value at current prices would be approximately £115 per ton c.i.f. U.K.

"Sample "B"

Length, 5½ ft. to 7 ft.

Cleaning, fair to good but partly defective

Texture, tending somewhat coarse and harsh

Strength, good

Colour, light to medium cream.

Generally, the fibre is a mixture and equivalent in quality to Davao J1, Davao G, Davao J2 and Davao K. The value approximately £105 per ton c.i.f. U.K.

Conclusion.

Such defects as are shown by the samples could be remedied by better preparation and classification, and it should then be similar to Philippine Manilla Hemp.

II

"Both samples appear to me to be very good; the one marked "A" is well cleaned, good length, good colour and strong; to-day's value is about £120 per ton c.i.f. U.K. The sample marked "B" is rather poorly cleaned containing too much strip; fair length, also some of the fibres show signs of weakness which is probably due to insufficient drying of the possibility that the tuxies were not stripped immediately they were cut. I am of the opinion that this grade could be improved with better care and cleaning; to-day's value is about £100 per ton c.i.f. U.K."

Conclusions.

The present samples are on the whole of good marketable quality, but show minor defects which can no doubt be remedied without great difficulty. They would be readily saleable to-day at the prices given above, but it should be noted that these values are exceptionally high, based on current prices, and it is not possible to say how long the market will be maintained at the present level.

METEOROLOGICAL SUMMARY, BOTANIC GARDENS, DOMINICA, 1946.

Year.	PRESSURE.				TEMPERATURE.										RELATIVE HUMIDITY	RAIN-FALL
	Corrected & reduced to 32° F., M.S.L.															
	Highest.	Lowest.	MEANS.		ABSOLUTE.				MEAN VALUES							
			9. a.m.	3 p.m.	MAX.	MIN.	MAX.	MIN.	DRY BULB		WET BULBS					
									IN.	IN.	°F	°F	9 a.m.	3 p.m.			°F	°F
IN.	IN.	IN.	IN.	°F	°F	°F	°F	°F	°F	°F	°F	9 a.m.	3 p.m.	%	%	
1945.	IN.	IN.	IN.	IN.	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F
January	30.09	29.88	29.98	29.95	87	64	83	68	76	81	72	73	76	64	6.12	6.12
February	30.10	29.88	30.02	29.95	85	66	81	67	75	80	70	71	75	61	5.80	5.80
March	30.08	29.83	30.01	29.93	88	65	84	67	79	82	73	74	75	68	1.47	1.47
April	30.05	29.93	30.00	29.96	90	67	87	69	80	83	75	77	76	69	2.88	2.88
May	30.05	29.91	30.00	29.97	95	69	90	72	81	85	78	80	85	82	3.18	3.18
June	30.12	29.98	30.05	30.00	94	70	90	72	81	85	79	83	89	87	7.04	7.04
July	30.07	29.93	30.01	29.98	90	69	87	73	81	85	76	75	79	67	6.15	6.15
August	30.04	29.91	29.99	29.93	90	72	89	72	81	85	77	78	79	67	9.44	9.44
September	30.01	29.85	29.96	29.91	90	70	87	72	81	85	77	78	78	69	8.34	8.34
October	29.98	29.80	29.93	29.87	91	70	88	72	83	85	76	77	77	66	4.40	4.40
November	29.98	29.67	29.91	29.82	90	70	86	72	80	84	75	77	77	70	13.91	13.91
December	30.04	29.80	29.93	29.85	89	68	85	72	78	82	74	75	83	70	4.34	4.34
YEAR	30.05	29.88	29.98	29.92	89	69	96	70	79	83	75	76	78	70	73.07	73.07
AVERAGE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Highest Barometer Reading 30.12 ins. on 5th June.
 Lowest " 29.67 ins. on 12th November.
 Highest Maximum Temperature 95°F on 13th, 14th, 15th, 17th, 21st, 30th, 31st May.
 Lowest Minimum Temperature 64°F on 5th January.
 Greatest Rainfall in 24 hours: 3.00 ins. on 15th November

RAINFALL RETURNS, DOMINICA, 1946.

	Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTALS
1.	Botanic Gardens	6.12	5.80	1.47	2.88	3.18	7.04	6.15	9.44	8.34	4.40	13.91	4.34	73.07
2.	Bath Estate	8.17	6.96	2.31	2.10	3.69	6.94	6.51	10.63	9.81	4.55	11.62	4.39	77.68
3.	Blenheim	3.72	6.41	5.75	5.73	8.91	6.30	5.47	11.96	11.11	5.30	10.56	10.35	91.39
4.	Colihant Agric. Sta.	3.16	4.63	1.32	.80	2.09	2.89	3.03	5.96	5.16	3.29	6.43	4.87	43.63
5.	Dejees	8.25	3.46	3.86	13.75	8.68	8.01	5.83	9.51	11.30	8.49	15.22	13.51	109.87
6.	Experiment Station (Roseau)	7.88	7.14	1.42	4.20	4.32	9.42	6.96	9.79	10.36	5.51	12.83	3.42	84.25
7.	Gomier (Giraudel)	12.22	9.72	3.54	5.12	10.42	10.84	9.89	16.50	15.86	6.32	17.39	12.62	130.44
8.	Grand Bay Agric. Sta.	8.29	4.97	5.08	5.57	6.52	6.02	6.10	11.97	8.39	6.88	13.81	12.74	96.34
9.	Hampstead	6.55	4.65	2.92	8.00	8.35	6.26	5.75	7.97	10.80	7.50	13.75	7.55	90.05
10.	L'Imprevue	13.68	10.79	4.02	5.30	8.33	13.05	11.21	15.48	15.17	9.30	14.63	12.04	132.40
11.	L'Eau Gomier	16.29	16.90	11.37	13.71	26.46	14.03	14.25	26.61	23.22	17.84	33.50	33.27	247.45
12.	La Plaine Agric. Sta.	6.96	3.33	4.59	13.91	8.19	7.67	5.43	11.65	13.29	6.56	13.55	9.47	104.60
13.	Layou Park	17.75	12.94	6.89	8.08	17.80	16.09	13.79	25.91	18.18	10.93	19.74	15.85	183.99
14.	Londonderry Agric. Sta.	5.71	4.65	4.73	6.70	6.00	6.71	5.98	10.99	9.41	9.20	16.87	9.14	96.09
15.	Picard	5.08	7.98	.69	1.45	5.69	5.82	5.39	7.37	2.21	4.62	7.49	6.56	60.35
16.	Portsmouth Agric. Sta.	6.80	7.74	3.07	5.07	10.58	9.27	9.16	12.16	12.41	8.86	9.74	14.00	108.86
17.	Point Mulatre	8.24	3.19	3.68	16.66	6.27	6.15	5.76	10.41	11.79	7.05	12.88	12.17	104.25
18.	Riversdale	18.93	17.70	10.08	13.52	25.60	13.08	14.42	26.31	22.75	14.92	25.96	28.08	231.35
19.	Ridgefield	12.47	9.87	3.45	6.07	7.78	9.18	13.40	16.93	14.14	7.81	17.81	9.72	128.63
20.	Stowe	8.18	4.55	4.90	8.87	8.85	7.13	6.00	11.80	9.10	9.45	14.72	12.51	106.06
21.	Sylvania	18.60	15.70	6.60	7.60	12.10	15.20	13.90	23.00	19.60	10.60	22.00	13.60	178.50
22.	Shawford	20.49	16.62	4.39	4.18	14.02	18.17	17.87	31.50	29.54	17.74	27.47	29.87	231.86
23.	Canefield	5.49	5.39	1.31	2.13	3.57	7.65	5.09	8.26	8.94	6.31	11.84	3.41	69.39



Checked by
C. P.